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More recently, however, some individuals have increasingly relied upon computer-based systems that organize their financial assets and liabilities and further provide them with a summary of their financial health. However, these systems tend to focus on the administrative aspects of financial planning without enabling the user to make reasoned choices about their financial futures. Furthermore, these systems are limited by their inability to dynamically analyze the financial goals. These limitations are counterproductive to the user's needs to develop and manage an integrated personal financial plan from an executive decision-making perspective.

Many existing financial management systems allow users to electronically organize their financial assets and liabilities. These systems typically focus on presenting the user with a summary of their financial transactions over a given period of time and their financial health, at a given instance. Furthermore, these systems typically rely on the user to continually update their personal financial data, although some systems allow access to user specific online data. As a result, these systems are merely data-driven calculators that are incapable of providing the user with meaningful financial coaching tailored to their financial intentions and expectations.

Similarly, some financial management systems present a static view of the user's financial health. These systems typically require the user to provide the most current financial data relating to their financial assets and liabilities. Consequently, when the user wishes to develop or update his or her financial plan, the user must input their most recent financial information. This problem is further exacerbated by the fact that these systems demand a lot of typing and guessing when the user enters financial data. This process is time-consuming and inefficient and does not promote an intuitive understanding of how complex financial variables interact to produce a sensible financial plan. A true user-friendly system would have to include a simple and intuitive graphical user interface. A Financial modeling is not very useful and accurate if the user does not submit all of his financial data because it is tedious to input all that data.

Another problem with many existing financial management systems is that the user is typically limited to managing the transactional details of their financial data. In these systems, the user is shielded from the planning and deciding aspects of developing their financial plan. Accordingly, the user learns very little from the process and remains heavily dependent on the system to provide an accurate summary of their financial health. These limitations further

exacerbate the lack of trust inherent within the relationship between the user and the financial management system.

Financial coaching is another feature lacking from most of today's financial system. The use of a live advisor is expensive. Furthermore, a great deal of the time spent with a live advisor is spent on isolating the problem and not attacking the causes of it.

No system currently exists that dynamically incorporates all of the user's financial assets and liabilities into an integrated summary of their health. Individuals do not want to focus on the transactional details of their financial information. Instead, individuals desire to assume an executive decision-making role in managing their financial life. A financial management system is needed where the user is provided with an integrated summary of their financial health and is given personalized financial coaching tailored to his or her financial goals and intentions.

SUMMARY OF THE INVENTION

A system, method and article of manufacture are provided for generating an online, web-enabled financial model. A service level agreement that defines a level of financial management desired by a user is provided. A user is prompted to input financial information relative to the user. The financial information is stored in a database. A prospective cash flow for the user is aggregated over a predetermined amount of time based on the service level agreement and the financial information. The prospective cash flow is then output to the user. The financial information may include intended revenues and expenses of the user and/or external financial data. Preferably, the financial information includes external financial data including such things as mortgage interest rates and market inflation rates.

As an option, the user may be allowed to re-input the financial information if the prospective cash flow is deemed unacceptable by the user. The financial information would again be stored in a database. A prospective cash flow of the user would again be aggregated over a predetermined amount of time based on the service level agreement and the financial information. The prospective cash flow model would again be output to the user.

In one aspect of the present invention, a risk analysis evaluation is executed if the prospective cash flow is deemed acceptable by the user. In another aspect of the invention,

coaching based on the financial information is output if the prospective cash flow is deemed acceptable to the user.

Furthermore, automated coaching both highlights projected problem areas and helps focus the user's attention on possible ways of attacking the problem areas. Furthermore, based on the negotiated service level agreement, the user may have access to a live advisor who can provide more specific coaching as well as the benefit of the experience and wisdom of an experienced human advisor.

The system of the present invention allows the user to model his or her life intentions in terms of a projected cash flow into the future using an online, web-enabled system. The model highlights possible problem areas, and offers automated and live coaching on ways to resolve the issues. The user interface model is designed to simplify the input of the massive amount of data necessary for a useful financial model. The model further allows the financial institution providing the service to the user to tailor various financial products to fit the user's specific needs.

These and other advantages of the present invention will be apparent upon a study of the following descriptions and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, aspects and advantages are better understood from the following detailed description of a preferred embodiment of the invention with reference to the drawings, in which:

Figure 1 illustrates a representative system architecture in accordance with a preferred embodiment;

Figure 2 is a block diagram of the financial management system;

Figure 3 is a block diagram of a representative hardware environment in accordance with a preferred embodiment;

Figure 4 is a block diagram of a financial management system;

Figure 5 is a flow diagram of a financial management system;

Figure 6 is a LifePath model flow diagram;

Figure 7 is an illustration of a LifePath model interface;

Figure 8 is an illustration of a salary input interface;

Figure 9 is a logic flow diagram for a salary input screens, various icons and functions;

Figure 10 depicts more logic flow diagram for a salary input screen;

Figure 11 is an illustration of an one-time life events interface;

Figure 12 is an intervention flow diagram and an illustration of an interface for setting a luxury index for each spending;

Figure 13 is a flow diagram for a use of idle funds intervention;

Figure 14 is a flow diagram for a tax break intervention;

Figure 15 is a flow diagram for an increase draw intervention;

Figure 16 is an illustration for reducing luxury spending intervention;

Figure 17 illustrates a flow diagram for a rebalance portfolio intervention;

Figure 18 illustrates a portfolio rebalancing interface;

Figure 19 illustrates a interface and a flow diagram for a formulaic cash flow input interface;

Figure 20 is an illustration of a LifePath model web page interface; and

Figure 21 is an illustration of a LifePath model web page's interactive computing environment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figure **1** is an illustration of one embodiment of a financial management information system, in accordance with the present invention, for providing personalized financial coaching in a collaborative computing environment. In figure **1**, financial management system **100** includes a financial coaching system **102** connected through a wide area network connected to the Internet **104** to the live advisor terminal **106** a user terminal **110**. The wide area network of the present invention **104** is connected to or is the Internet. The Internet is based on the TCP/IP communication protocol first developed by the Department Of Defense in the 1960s. The present invention may be implemented using other protocols and other networking system, including wireless networks, the Network File Service (NFS) protocol used by Sun Microsystems or a Novel network based on the UDP/IPX protocol.

Preferably, the financial advisor system **102** communicates with the user through any number of devices such as handheld wireless personal organizers, pagers, cellular telephones,

land telephones and regular desktop computers. All of the above equipment can act as a user terminal **110**.

The user (e.g. individuals or company representative seeking financial advice) may access the system using a user terminal **110** (e.g. personal computer). A typical user computer terminal would be described in more detail in figure **3.** The user computer is preferably equipped with software to receive live streaming video and/or still pictures over the wide area network **104,** from the advisor video camera **108-B**. Preferably, the user terminal **110** is further equipped with a video camera **108-A** and software to transmit live streaming video from the user, across the network **104** to the live advisor at the advisor terminal **106**. Access to the live financial advisor **106** and all other services provided by the Financial management system is controlled and channeled through the Financial Advisor system **102**. The user can access the financial coaching system **102** through the Internet **104** or by telephone **109-A**. A user telephone call is channeled through a call center discussed further subsequently in Figure **2** to the Financial Advisor System and to the live advisor **106**.

The live advisor terminal **106** is preferably equipped with the video camera **108-B** for transmitting live streaming video. The live advisor **106** may further communicate with the user via a telephone **109-B**.

Figure **2** is a block diagram of an implementation of the financial coaching system **102.** The user may access the system through the Internet **104** and through a firewall server **112**. A Web server **114** provides the user with a personalized website providing an interactive interface between the user, the financial advisor and financial management system **100**. The financial advisor system **102** further comprises a mail server **116**, an application server **126**, a call center **117** and a data server **128**, all interconnected through a local area network **113**. The local area network (LAN) **113** may be any wide area intranet system or the internet.

Security is important in any financial system. The firewall server **112** controls the access to the financial advisor system. The purpose and functionality of a firewall server is to prevent access to the system by unauthorized users and it would be appreciated by one skilled in the arts. Firewall servers are available through a variety of vendors and have become a standard feature of any secure system used as the primary defense against intruders and hackers.

The web server **114** provides a personalized interactive web page environment for the user to operate in once he accesses the system. The web page is acting as the web interface

between the financial system 'Web pages may be created using the Hyper Text Markup Language (HTML), scripting languages such as Java Script™ or Pearl™ as well as Java ™ applets, Visual Basic, Shock wave, Cold Fusion, etc. Creation of customized web page using any of the above programming languages is well within the scope of one skilled in the arts. The personalized web page provides an environment and an interface for the user to interact with the financial advisor system **102**. As an example, in one embodiment of the present invention, by selecting an appropriate icon from the interactive personalized website, the user is able to learn, plan, decide, transact and monitor his financial model.

The mail server **116** handles electronic mail communication between the user and the financial advisor system **102**. The Mail server **116** may operate using any standard protocol such as Simple Mail Transfer Protocol (SMTP) and it is within the scope of the knowledge of one skilled in the art.

The application server **126** is where the various modules of the financial advising system reside. The modules include the various coaching engines, the LifePath and the portfolio modeling sub-systems. The applications may be implemented in many programming languages, including the object oriented programming languages such as C++ or Java™ and may be based on any platform such as UNIX™ , Apple OS ™ or Windows™ and NT™. Furthermore, the coaching engine rules for various coaching engine can reside on a data server **180**.

Alternatively, the user may also interact with financial coaching system **102** through a telephone **124**. The user's call is channeled through the call center system **117**. The call center **117** includes an Automatic Call Distribution (ACD) server **122**, an Interactive Voice Response Server (IVR) **124**, a Computer Telephony Integration (CTI) server **118** and a RM workstation **125**, all interconnected through a Local Area Network or intranet **127**. The local area network **113** may also be used in interconnecting the various servers of call center. When the user calls into the financial advising system **102** using a remote telephone **124**, the IVR sever **124** receives the user's telephone call. The IVR system greets callers, prompting them for identification, and providing some information automatically. The Automatic Call Distributor (ACD) server **122** distributes the call using the Internet Protocol (IP) over the network, to the appropriate live coach. The Computer Telephony integration server (CTI) **118** acts as the link between the live advisor's telephone call and the workstation based applications and allows them to automatically work together. As an example, when the IVR server **120** obtains some information about the

calling user, this information is delivered to the live advisor's workstation **106**, so the advisor does not have to request the same information again. Once the telephone call is properly routed to the live advisor, the user can use other means of communication such as electronic mail or white board ™ simultaneously while he is interacting with the live advisor.

The Data server **128** stores user input data and supplies the application Server **126**. The data server **128** includes outside database sources from which the financial coaching system **102** can draw information such as actuarial data about customers and historical price data on securities from sources such as Reuters, user financial information such as banking and portfolio information in other financial institution, and market information such as the day's closing numbers for various market indices as well as individual stock securities pricing information. Formatted in the Open File Exchange (OFX) format, now the accepted Internet standard used by programs such as Quicken™ and MS Money ™ the data server through the firewall can easily exchange information with the outside world and specifically the user.

It should be noted that various computing platforms could be used to access the financial management system of the present invention. For example, a networked personal computer environment, a client-server system, a mainframe terminal environment, WEB TV terminal environment, dumb terminal environments can be used to access the financial management system of the present invention. Depending upon the user's needs, a client-server system (the web servers) may be the most preferable computing system for implementing the financial system of the present invention. Furthermore, the representation of each server such as an application server or a data server, is a logical representation. The actual physical systems may be distributed over many servers, or be included on a single machine.

Figure **3** is a computer system architecture that can be used in implementing the present invention. This computer system architecture can be used to implement a user workstation, or any of the servers called for in figure **2**. The present invention may be practiced on any of the personal computer platforms available in the market such as an IBM™ compatible personal computer, an Apple Macintosh™ computer, Solaris™ or UNIX™ based workstation. The operating system environment necessary to practice the present invention can be based on Windows™, NT™, UNIX™, Apple Operating System™, or open source operating system software such as Linux™ and Apache™. Furthermore, the computer system can support a number of processes. As appreciated by one skilled in the art, the processes may be written in

any of the available programming languages including object oriented programming languages such as Java ™ or C++.

The computer system architecture depicted in figure **3** includes of a central processing unit **130**, such as a microprocessor, a read only memory (ROM) **136**, a random access memory (RAM) **134**, an input and output adapter **138**, a storage device **140**, and interface **142** connecting a plurality of input and output device such as a keyboard **144**, a mouse **146**, a speaker **148**, a microphone **150**, a video camera **152** and a display **158**, and a system bus interconnecting all the components together. The computer may also include such devices as a touch screen (not shown) connected to the bus **132** and communication adapter **154** such as a dial up modem, a Digital Subscriber Line (DSL) modem or a cable modem, for connecting the workstation to a communication network **104** (e.g., the internet). The storage device **140** can be any number of devices including but not limited to hard disk drive, a a floppy disk drive, a CD-ROM device, a DVD device, a tape device, and removable magnetic storage devices such as a Jazz™ drive or ZIP™ drive. There are therefore a number of computer readable media encompassed by the system depicted in figure **3**, including but not limited to RAM **134**, ROM **136**, storage device **140**, and storage accessible over the network connection **104**.

Figure **4** represents an illustration of the data flow of a financial coaching system **102** of the present invention. A user using for example the user computer **110,** preferably connects to the financial coaching system **102** over the Internet **104**. After authentication by a firewall server, the user at a user terminal **110** enters the Financial coaching system **102** at the service level subsystem **160**. The service level agreement provides the level of services to which the user is entitled. Once the user has negotiated a service level agreement **161** , he is prompted to select the model to be used in operation **162**. In one embodiment of the present invention, the level of service and support selected in the service level agreement **160** controls the user's access to different modeling tools.

In a preferred embodiment of the present invention the LifePath model may be the hub of the financial institution's relationship. The LifePath model provides data to all coaching engine allowing customized coaching output to be dispensed to the user based on his unique financial situation. The LifePath model combines all the pertinent financial information about a user in one coherent and comprehensive picture and models the user's life intentions into an aggregated cash flow system over a user selected period of time. Using the terminal **110** the user inputs his

life intentions in terms of projected income and expenses as well as assets and liabilities. The LifePath model **164** maintains an interactive dialog between the user and financial management system **100**. The LifePath model integrates the financial information available about the user in accordance with the user's service level agreement **160** to create an aggregate forecast of cash flow over the user's lifetime. The financial information available about the user includes the user's life intentions data **166** and the user's external financial data **168**. In a preferred embodiment of the present invention, the user's external financial data can include current checking account information from the user's bank or data related the user's investment retirement plan. By incorporating external data **168** into the LifePath model **164**, the system is capable of dynamically analyzing the financial needs of the user and providing the user with an understanding of their financial health at any point with minimal input form the user. As discussed above, personalized service level agreement **160** can optionally allow the user to limit the system's and/or advisor's access to the user's external financial data **168**.

Additionally, LifePath model **164** also integrates external market data **170** into the aggregated forecast of the user's cash flow. In one embodiment of the present invention, external market data **170** includes information such as current mortgage interest rates or market inflation rates. Access to both internal and external databases is controlled by the user's service level agreement. The LifePath modeling tool **164** is further discussed in a related U.S. application entitled LifePath Counseling by the same inventors as the present invention, Application Serial No. 09/705,288, filed on the same day as the present application and incorporated herein by reference.

Alternatively, the user may by pass the LifePath model and start with a portfolio modeling tool **182**. The availability of the portfolio modeling tool is based on the user's service level agreement **161**. The user would supply his financial portfolio information to the financial advising system **102**, either directly using the user terminal **110** or indirectly through the Internet **104**, by accessing a multiplicity of databases **166**, **168** and **170**, and accessing information such as his securities portfolio at a particular brokerage firm.

A financial portfolio modeling tool **182**, is an interactive tool that has access to the all the information available to the LifePath model **162**, such as the user's life intentions data **166**, the user's external financial data **168**, as well as external market data **170**. User insight data **167** and aggregated data from the LifePath model **165** is also available to the portfolio modeling tool.

As a result the user has little to input and may start using the portfolio model **182** very quickly without the need to do a lot of tedious data input. The financial portfolio modeling also allows the user to access a computer coach and/or a live advisor based in part on the service level agreement.

An alternative embodiment allows the user to use the LifePath model **164** and set his long term financial goals and then use the portfolio modeling tool **182** to adjust his investment portfolio to better achieve his long term financial goals.

The LifePath interactive financial model may capture the customer's intentions at the start of the relationship and displays them as lifetime cash flow requirements. Customer data and LifePath information combine to form a deep understanding of the customer's financial needs at each stage of life. Using dynamic, interactive multimedia, it quickly captures the customer's intentions and expectations about an ideal future. This flushes out some issues which trigger the initial discussions in the relationship. It also supports estimating the lifetime value of the customer and the appropriate levels of service. The data from this model combines with insight from product and transaction history as well as real time input from the abundance of interactive models to power rule-based advice engines. This automated coaching leverages the advisor's time so that a broad customer based can be profitably supported. Configured using sliders and other interactive controls, there is little typing to slow the process down. The controls build a linear graphic representation of a LifePath which models predictable life transitions over time more effectively then data-driven calculators. Sales opportunities, lifetime customer value and appropriate fee structure are now more accurately identified.

Coaching generation subsystem **172** comprises one or more advice or coaching engines **174**. Coaching engine **174** dynamically analyzes the financial needs of the user in accordance with the user's service level agreement. Furthermore, the coaching engine **174** is configured to operate with coaching engine rules repository **176**. Coaching engine rules repository **176** is a collection of rules-based business logic that produces clear automated advice. Coaching engine rules repository **176** generates its advice using LifePath data **165** and user insight data **167**. Alternatively the investment portfolio data from the portfolio modeling tool **182** triggers the coaching engines advise. In one embodiment of the invention, user insight data **167** includes transaction history, product or purchase history, as well as demographic information about the user.

In addition to providing coaching to the user, advice generating subsystem **172** may also help the user to consider product solutions . As an example, in one embodiment of the present invention, the coaching engine **174** may help the user consider and include deposit products and loan products in their financial plan. For example, the coaching engine **174** may help the user consider a certain mortgage or bridge financing. Similarly, the coaching engine **174** can also suggest the user the need for financial products such as home improvement, line of credit, or credit card products. Coaching engine **174** can also have access to product information from various financial institutions (not shown). Accordingly, the user can request additional information about the various products recommended by the system.

The user can access their financial plan or LifePath model using user terminal **110**. User terminal **110** is part of collaborative computing environment **178** and is in data communication with virtual coach **180** and the advisor terminal **106** through communications network **104**. In one embodiment of the present invention, communication network **104** is the Internet.

The advice and product solutions generated by the advice generating subsystem **172** are presented to the user through virtual coach **180**. Virtual coach **180** presents the product recommendation with accompanying rationale. The user may or may not wish to contact the dedicated financial advisor for additional advice or information. Because the system generates reasoned financial coaching in accordance with the user's financial needs and intentions, the financial advisor is able to operate more productively. Furthermore, the user can test different scenarios by altering the data captured by LifePath model **164**. Each scenario can then be analyzed by coaching engine **174**. The virtual coach **180** is further described in the related U.S. application named "Automated Coaching For A Financial Modeling and Counseling System", Application Serial No. 09/705,255, by the same inventors as the present invention, filed on the same day as the present application and incorporated herein by reference. Furthermore, the LifePath model is further described in the related patent titled: "A Financial Planning and Counseling System Projecting User Cash Flow", Application Serial No. 09/705,288, by the same inventors as the present invention, filed on the same day as the present invention and herein incorporated by reference.

In addition to virtual coach **180**, the user can optionally interact with a dedicated financial advisor **106** through the Internet **104**. In an embodiment of the present invention, financial advisor **106** is located in a call center **118** on a relationship manager's workstation **125**.

Financial advisor **106** may interact with user **110** using various multimedia interaction tools, for example, still-shot images or video streaming. Accordingly, the user is able to buttress the coaching received from virtual coach **180** with advice from a dedicated financial advisor operating at terminal **106**. In many situations, the live advisor's input may be necessary, since he brings a level of expertise and experience no automated coaching system may match. However, since the automated coaching has framed the problem for the user and the live advisor, both can immediately start analyzing alternative solutions in a focused and cost efficient fashion. The term advisor as used herein is not necessarily limited to licensed individuals legally authorized to give advice.

Depending on the level of service the user has negotiated with the service level agreement **161**, he may have multiple modeling tools available in the financial management system. In alternative embodiments of the present invention, modeling tools for analyzing various financial instruments such as bonds, reverse mortgages, option contracts and a like may be available to the user.

Figure **5** illustrates a flow diagram of an embodiment of the financial advisor system **102**. The service level agreement process **160** may be one possible entry point for the user into the financial coaching system **102**, where the user negotiates a service level agreement and sets the level of financial service desired. The service level agreement **161** defines the user's desired level of advisor support as well as limiting the system's access to user provided information.

After the service level agreement **182** has been negotiated, the user makes a first pass through the LifePath model **164**. Note operation **184**. In one embodiment of the present invention, the user may input its life intentions in terms of revenue intentions and expense intentions and assets and liabilities. The system then aggregates the information into a cash flow analysis over a user's income and expenses over a user defined period of time. The model may also include external data related to the user's finances. After a first pass through the LifePath model (step **184**), the system may estimate the probable customer profitability **186** based on the user's financial plan given the user's life intentions and other financial information. If the user's service level agreement does not match the probable profitability **188**, the user can renegotiate the service level agreement negotiation or revisit LifePath model step **184** to modify the model parameters, and then prompt the system to re-estimate the probable user profitability **184**.

After fine tuning the LifePath model (step **188**), context sensitive automated computer coaching **192** is provided to the user using a coaching engine based on business logic rule-based engine. The rules repository **176** supplies business rules. The automated coaching engine **174** may highlight for the user periods within his LifePath model which need special attention, such as a projected cash deficit or cash surplus. Based on the coaching from the automated coaching engine **174** and/or a live advisor, the user may accept or reject the LifePath model **194.** If the user rejects the LifePath model, he may further modify and fine tune the LifePath model in step **188** until he is satisfied.

In one embodiment of the present invention, the LifePath model process **196** is followed by an Executive activity process **198** where the system allows the user to assume an executive decision-making role in making their financial future. The executive activity process **198** enhances the user's ability to manage his or her financial life from an executive perspective. For example, through interaction with the system, the user learns **200**, plans **202**, or decides **204** the respective elements of their financial plan. Since the LifePath model **164** projects the user's cash flow in the future, the user may use the LifePath modeling tool **164** to change input variables such as savings, salary and expenses, and observe the long term effect of the changes on his financial goals. The intuitive graphical display of the LifePath model allows the user to get an immediate qualitative as well as quantitative feedback of the effects of the incremental changes on his long term goals. After engaging in these activities, the user may choose to initiate a transaction **206** based upon the advice generated by the system. In alternative embodiments of the present invention, both the automated coaching and the live advisor may recommend various financial products suitable to the user's financial situation. Furthermore, after initiating the transaction **206**, the user may monitor **208** and/or manage **210** the status of the products selected. In one embodiment of the present invention, the learn icon **200** allows the user to obtain information on the products recommended by the automated coaching engine or the live advisor. The system may have to access outside databases to access third party products which may be beneficial to the user's financial situation. The rule based coaching further may check the governmental regulations and impacts of adding or deleting a specific product to the user's financial portfolio. The governmental regulations analyzed can include an analysis of the tax consequences of using a certain product specific to the user.

Figure **6** is a logical flowchart of a process followed by the LifePath model **164**. Initially, the user typically develops **212** their LifePath model by inputting their life intentions. As discussed earlier, the life intentions may be expressed as revenue intentions or income **214** as well as expense intentions or expenses **216**. The user income **214** and expense **216** information can be fed to the system from a customer information file database **218**. This information may be combined with external market data **220** from external databases making the process of inputting personal financial information more interactive. After developing the LifePath model (step **212**), an aggregated modeling module is executed **222**. The user can verify that the model produced by the aggregated modeling module is acceptable **224**. If the model is not acceptable, the user can return to revise their life intentions **212**. Otherwise, if the model is acceptable, the user can execute the risk modeling module **226**. As discussed above, the risk modeling module assists the user in understanding their exposure to financial risk by illustrating how their ideal financial model would be impacted by a typical life crisis.

After the risk modeling module has been executed **226**, the user may be provided with automated coaching **232** as well as a time-line display **234** of their aggregated forecast of their cash flow. Once again, the user may have the opportunity to verify that the model produced is acceptable **236**. If the model is not acceptable, the user can return to revise their LifePath model in accordance with their financial life intentions **212**. If the LifePath model produced is acceptable, the user can either exit the system **240** or initiate a transaction **238**.

Figure **7** is an embodiment of a screen layout for the LifePath model **164**. The model display window **244** depicts displays the user's cash on hand **246** and the user's cash needed **248** graph over a period of time. The time span covered by the model is defined by the user using the "From Year" window **250** and the "To Year" window **252**. The data point corresponding to the model is fed to the system by the user by selecting the Input Revenue icon **256** and the Input Expense icon **260**. In one embodiment of the present invention the revenues **256** include salary, investment, pension, alimony, disability, annuity, fees, loan or others. The expenses **260** include housing, transportation, entertainment, education, health care, vacation, savings, personal, investment, insurance, tax, loan and miscellaneous.

Life events can be accounted for by selecting one of the event icons **262**. In one embodiment of the present invention the life event includes joblessness, disability, fatality, market downturn, portfolio downturn, divorce, fire, theft and collision. Based on actuarial data

the model would calculate the likelihood of a certain dollar impact on the user's long term cash flow. Once one or more life risk events are selected, the user applies the event to the LifePath model by selecting the Stress Test icon **264**. The personal Net Worth icon **266** would calculate the effect of the user selections on the user's personal net worth.

The LifePath model may be used to highlight future negative or positive cash flows periods. Through automated coaching the system can focus the user's attention to possible ways of solving the cash flow problem. Preferably, automated coaching is dispensed to the user in syntactically correct natural language using the coaching window **268**. A scroll bar **269** is used to scroll up and down the coaching strings.

Based on the automated coaching, the user may select a variety of possible actions to solve the cash flow issues. The user may select Tax break icon **270** to take advantage of possible tax breaks. He may reduce his luxury spending **272**, increase income **274**, redirect investment **276** to increase his income, increase "draw" from his personal business **278,** refinance **280** a business or home, rebalance his investment portfolio **282**, borrow **284**, sell luxuries **286**, sell necessities **288** such as a car and even declare bankruptcy **290**. A series of functional icon allow the user to close the screen **294**, save the changes to the LifePath model **296**, revert back to the previous state of the model **298**, submit the changes **300**, print **302** and undo the changes **304**.

Figure **8** depicts an embodiment of how to input, edit and model the user's salary stream **305**. The display window **306** depicts the user's salary stream over a user selected time period. The user inputs his estimated highest **308** and lowest **310** expected salaries over the time span of the LifePath model covers. The user will input his estimated income in the input field **312** on a year by year basis. The income will include salary, spouse salary, regular draw from the business, loan repayment, family contribution, alimony, disability, rental income and other salary.

In one embodiment of the LifePath Model, the interface used to plot time series for revenue and expenses is interactive. Each is represented as a timeline between any two defined dates and each annual point **314** of timeline can be interactively dragged up or down on its vertical axis. This device makes it easy to estimate changes and rough in long stretches of time without the tedium of conventional spreadsheet data entry. The interactive data entry process can iterate as needed until the model is as complete as possible.

Function icons allow the user to delete a point **316**, close the salary input screen **318**, revert to a previous state **320**, submit **322** the salary data for incorporation into the model, and request for automated or live coaching on how to do and what to do at any given specific time. The cash outflow or expense may be entered in the same way and includes household expenses, investment, transportation, vacation, child support, rental and insurance payment.

Figure **9** depicts a logical flow chart of the salary input screen. The user may start by clicking the salary icon **326**. The system pulls the customer file **328** and checks to see if salary data exists **330**. If salary data already exists, the system would get additional data **332**, and open the edit window **334**.

If no salary data exists, the system first gets a date range from the file **336**. Next, the system displays a graph with dates but no Y-scale **338**. In one embodiment of the present invention, the financial planning and counseling system prompt the user to see if he needs coaching **340**. If the user needs coaching, the system may provide automated interactive coaching **342**. If user does not require coaching, then the system traps the user's next action **344**.

The user can rescale the displayed graph by changing the highest to lowest salary point **346**. If the highest and/or the lowest salary figures are changed or are entered for the first time, the LifePath model changes rescales the graph **348**. The user can delete an annual point **314** by clicking on the delete a point icon **316**. Note operation **350**. Once the delete a point operation is selected, the system prompts the user to click on the specific point to be deleted **352**. The marked point is then deleted. Note operation **354**. The system automatically connect the two adjacent points on either side of the deleted annual point **356** and redisplays the income graph **358**.

In the preferred embodiment of the present invention, the salary graph **306** can be directly modified by clicking on it. Note operation **360**. The LifePath model checks for points nearest to the date selected **362**. If there is no annual point near the selected point on the graph, a point is created at the nearest annual point **366**. If there is an existing annual point near the annual point **364** is moved to the new Y-value. The system rejoins the adjacent points if needed **368** to incorporate the new annual point location. If the Y-movement of the new annual point is less than 15% of the previous Y-value the system goes on to trap the next action **372**. If the Y-movement of the annual point is greater than 15%, that is if the income delta is greater than 15% **370**, then the system prompts the user for an explanation. Note step **374**. The user inputted

reason is posted on the graph **376** and the system captures the event in the "milestone" list **378**. The milestone list would include events such as promotion or retirement.

Figure **10** is depicting a logic flow diagram for an embodiment of the present invention. When the mouse rolls over within the graph **380**, the system finds the Y-value of the nearest date **382** and displays the X value or the year and Y values or the salary for that annual point **384**.

The user may begin the revert process **386** by selecting the revert icon **320**. The financial planning and counseling system (the LifePath system) informs the user that the current changes would be lost in a revert operation, and prompts the user for a confirmation **388**. If the user response is negative the system moves to trap the next action **390**. If the user response is positive, the model reverts to previously saved data **392**.

By selecting the close icon **318**, the user may close **394** the current window. The system informs the user that without saving the data, all data would be lost upon closing of the window and prompts the user for a confirmation **396**. If the user response is negative, the system moves to trap the next action. Upon a positive user response, the system closes **400** the salary window **305**.

In a preferred embodiment, automated coaching may be provided throughout the process of using the LifePath model including data entry. The user may request coaching by selecting the coaching icon **324** and start the coaching process **402**. In one embodiment of the present invention the system displays coaching in the form of animation with voice over explaining the purpose of the activity and how it is done **404**. Other coaching methods such as syntactically correct English coaching strings, streaming video clip or even a live advisor could be made available to the user based on the user service level agreement.

Upon the selection of the submit icon **322** the user lunches the submit process **406**. The system asks the user if they want to update the LifePath model with the new data entered **408**. If the user replies negatively the system moves on to trap the next action **410**. If the user responds positively **412**, the system closes the salary window **412**, updates the LifePath data array **414**, recalculates aggregated values by year **416**, and updates the LifePath display **418** as well as the milestone list **420** and compute and displays appropriate coaching **422**.

Figure **11** is an embodiment of a screen for entering, editing and modeling one time income and expense events such as buying or selling a house. The time event graph **426** is populated with one time events that affect the user's financial situation and need to be accounted

for if a realistic financial picture is desired. The one time life event points **428** are entered by selecting the "add an event" icon **430**. Specific events are selected from a drop down list box **432**. An unlimited number of non-standard entries as well as user specified entries can be added to the list. When the specific One-Time life event is selected from the drop-down list box **432**, a life event detail window **434** opens up, where the user inputs the details such a cost breakdown about the specific event. The initial value will come from the dialogue box. The submit icon **322** will trigger changes in cash balances displayed in aggregated LifePath. Sales and purchases of assets trigger changes in personal net worth. Depreciation and appreciation are calculated based on industry norms and using actuarial data from outside databases if needed. The life event's impact on taxation is also calculated. The LifePath model highlights possible future cash flow issue and coaches the user through automated coaching or a live advisor on how to deal with the specific issue.

Figure **12** outlines possible interventions that could be recommended to the user in resolving the cash flow issues in an embodiment of the present invention. The user attacks the cash flow issue first by the use of idle funds **436**. The user may be directed next to take advantage of any available tax breaks **438**. If the tax break results in idle funds to become available, the user can use it to preempt his problem **440**. An increase in draw may be applied to reduce a negative cash flow **442**. The idle funds available from an increase in draw would be applied to the cash flow problem **444**. Reducing luxury spending **446** would also result in idle funds **448** becoming available for cash flow problem resolution. The user may opt to rebalance his portfolio **450** with a possible resulting increase in idle funds **452** which would be available to eliminate cash flow issue.

Every asset in the user's Personal Net Worth and every expense cash flow must be rated as a luxury or necessity on a scale of 1 to 5. This rating is done using a window **454** such as the one depicted in Figure **12**. A simple user interface such as a slider **456** is used to rate each asset and expense on a simple necessity to luxury index. This is referred to as the luxury index. After each intervention the user should get a chance to try again or revise his intervention input before the changes are posted to the LifePath model. After each intervention, the user gets a feedback on how the intervention affected the shortfall or surplus.

Figure **13** outlines the recommendation to use idle funds in the event of a shortfall in one embodiment of the present invention. To begin the system runs a diagnostic routine **458**, with

resulting automated coaching such as the one depicted in **460**. The system checks for for a surplus of funds before the shortfall. Note operation **462**. If there is no surplus of funds before the shortfall, the system may move on the next possible intervention **488**. If there is a surplus before the shortfall **464**, the system may look to see if the shortfall is due to either a luxury or necessity spending **466**. If there is no shortfall associated with a luxury or necessity the system coaches the user to invest funds at the same rate as other cash components of the general portfolio **468** and more specifically to invest the surplus for a given period of time at a specific rate **470**. If the shortfall is associated with a luxury or necessity expense, the system prompts the user to identify the expense from the dropdown list **432**. Note operation **472**. The system then gets the luxury index of the particular expense **474**, and automated coaching suggest to the user to invest funds at specific rates based on the luxury index **476**. The system calculates the future value of the surplus invested to the end of the surplus period **478**. The system compares the invested value to the future shortfall. If the shortfall is smaller than the value of the invested idle funds, the system prompts the user that the shortfall has been eliminated **482** and goes to the next projected shortfall **484.** If the value of the invested idle funds is less than the shortfall then the system may prompt the user that the invested surplus reduced the projected shortfall by $X and $Y is still needed to eliminate the remaining shortfall **486**. The system then moves to the next intervention **488**.

Figure **14** illustrates another possible intervention to reduce or eliminate a possible projected cash shortfall in the future in an embodiment of the present invention. The system prompts the user for possibilities of reducing taxes through unused tax breaks **490**. If there is such a possibility, the system recommends a specific tax rate reduction **494** and runs the diagnostic engine **498** to see if the shortfall has been eliminated **500**. If the shortfall has been eliminated, the system moves on to the next shortfall **502**. If there still is a shortfall, then the system moves to the next possible intervention **504**. If there are no unused tax breaks available **496**, then the system goes through the operations **500** and **502** or **504** depending on whether the shortfall persists or not.

Figure **15** illustrates another possible intervention to eliminate a projected cash flow shortfall in accordance with an embodiment of the present invention. The LifePath system may at first ascertain whether the user owns a business **506**. If the user is not a business owner the system moves on to the next intervention **508**. If the user does own a business the user is asked if

he can withdraw funds from the business without putting it at risk or decreasing its value significantly **510**. If such a withdrawal is not possible **512**, the LifePath system moves on to the next intervention. If the possibility of withdrawal from the business exists, the user inputs possible options of withdrawing a lump sum, an annual draw or a draw over X years and a dollar figure for each possibility **514**. The LifePath system runs its diagnostic engine **516**, and if the shortfall is eliminated the system moves to the next shortfall **518**. If the shortfall persists **517**, the LifePath system moves on to the next intervention **520**.

Figure **16** illustrates a screen shot for reducing luxury spending in accordance with an embodiment of the present invention. To reduce a projected cash shortfall in the future, the user may reduce his luxury spending. The luxury spending reduction screen **522** helps the user identify and reduce possible luxury expenses he may reduce and would demonstrate to the user effect of the reduction on the projected shortfall. The window **524** shows the graph of the cash flow from year one to the first year of the shortfall. A bar chart showing both the cumulative savings **530** and cash shortfall **532** are displayed in the window **528**. In another window **534** a clickable list of recurrent expenses **536** is displayed from which, the user may select spendings he is willing to reduce. This interactive process continues until either the shortfall is eliminated or the user has eliminated or reduced his luxury expenses to the level he is comfortable.

Figure **17** illustrates another possible intervention to reduce or eliminate a projected cash short fall. The LifePath system begins by calculating the value in the first year of cash flow shortfall **538**. The user's investment portfolio value and the breakdown between the various classes of assets are derived from the user's personal net worth data. For reducing projected cash shortfalls these assets must be in the outside of an IRA or a 401K plan. In one embodiment of the present invention the user's investment portfolio has 3 components: cash equivalents, equities and fixed income (bonds, etc.). Cash is assumed to grow at 3%, equities at 10% and fixed income assets at 6%.

The user may rebalance his portfolio by changing the mix between the various assets in his portfolio **540**. The LifePath system recalculates the portfolio value from the start to the first year of the shortfall **542**. If the value of the shortfall is smaller than the change in the value of the portfolio **544**, the LifePath system may dispense coaching feedback **550** and moves to the next shortfall **552**. If the value of the shortfall is greater than the change in the value of the portfolio **545**, then the LifePath system prompt the user to try to rebalance his portfolio again

546. If the user selects to retry to rebalance his portfolio he will be taken to step 540. If he is done with rebalancing his portfolio, he moves on to the next intervention 548.

Figure 18 is an embodiment of a portfolio rebalancing interface 550. The change in a portfolio based on rebalancing 554 and its effect on the cash shortfall target to be overcome 556 are displayed in the form of a bar charts in the display window 552. Changes due to rebalancing of the portfolio are reflected in the bar graphs 554 and 556. Three icons for high risk 558, moderate risk 560, and low risk 562 flash are used as indicators for the amount of risk the user's portfolio is assuming. When the equities comprise more than 35% of the portfolio, the high risk icon flashes. Moderate risk is set at equities being less than 25% of the total value of the portfolio and low risk is set when equities are less than 15% of the total portfolio. A unique user interface 564 is used by to set the distribution of the assets in the user's portfolio. As the user moves the sliders 566 and 568, the resulting changes in the portfolio is reflected in the bar chart 554. By changing the asset mix in his portfolio, the user is assuming various degrees risk and he may increase or decrease the overall return on his investment portfolio and resolve the projected cash shortfall.

Figure 19 outlines an example of an embodiment of the layout for calculating and analyzing a long-term financial commitment such as a mortgage 570. The same window may be used for any other type of formulaic cash flow such as loan repayments, leasing, annuity cash flow and others alike. An information entry window 572 may be used to input the details on the financial instrument. The user inputs the amount of the down payment 574, the loan period 576, the interest rate 578, the years into the loan 580, the type of loan 582 and the payment 584. The mortgage type may require more input for special features, balloon payments, etc. Once all the information is inputted, the user submits the data 590 and a calculator calculates a graph of the cash flow for the mortgage 592 and displays it to the user 594. The window 592 and the graph 594 are a possible window and a graph modeling the mortgage. Once the user is satisfied with the model, he may close the timeline 596 and the LifePath system updates the LifePath model with the information for the mortgage 598.

Figure 20 is an example of one embodiment of a web page interface for the present invention. The web page interface of figure 20 shows a customized web site and an intuitive graphical user interface for the LifePath model subsystem. As previously discussed, the web site may be a personalized web site which a client uses to access a customized virtual coach and/or

a live financial advisor. As depicted, the graphical user interface can include an advisor area **600**, where the advisor may be represented as a still image, via streaming video, or represented by a character. Selecting a link, such as the Contact Advisor link **602** shown, causes a connection to the advisor to be established. Preferably, the advisor and the user are able to communicate orally via network telephony of a type known in the art, but communication via email, chat, telephone call, or of any other type is acceptable.

The advisor uses the space to negotiate an initial Service Level Agreement (SLA), and begin the modeling of the customer's LifePath. This flushes out issues and permits an early estimate of customer value potential. The SLA nails down much advisor time the customer wants, how information will be shared, and how much intentions-based advice the customer will welcome. The advisor configures the Web site in accordance with this agreement. The investment of effort in this, along with the personal online relationship begins to develop customer loyalty. Much of the communication presented by the system is generated by rule-based business logic. This is what leverages the advisors, extending their reach. It should be noted that the client negotiates a Service Level Agreement at the start of the relationship for desired level of advisor support and how the bank may or may not use their personal information. Website functionality can provide new levels of customer support even if customer wants low level of advisor interaction.

A link **604** may be provided that allows access to email. Other links can include a link **606** to personal memoranda, a link **608** to a links page, and a link **610** to a financial calendar. As an option, a calendar **612** and links **614** to news stories may be displayed on the page.

A virtual coach area **616** of the page can be provided to display the comments and advice created by the virtual coach. As described above, client data drives a rules- based "coaching engine" that dynamically analyzes customer needs and automates most of advisor's work. The client is encouraged to consolidate all their financial information in the site, recognizing assets and liabilities with other financial institutions.

Upon selection of a button depicted along the bottom of the screen, a particular feature of the financial management system is displayed. For example, selecting the learn button **618** may bring up a portion of the screen (or a new screen) that discusses the functions and features of the financial management system. The plan button **620** may display the LifePath model in time series form. A decide button **622** may display a screen that allows the user to make financial

decisions, such as allowing a user to select transactions recommended by the advisor and/or the virtual coach. A transact button **624** may display a transaction screen on which the user performs transactions. A monitor button **626** may display current and/or historical information about transactions made by the user and/or financial performance.

The LifePath interactive financial model captures customer's intentions at the start of the relationship and displays them as lifetime cash flow requirements. Customer data and LifePath information combine to form a deep understanding of the customer's financial needs at each stage of life. Using dynamic, interactive multimedia, it quickly captures the customer's intentions and expectations about an ideal future. This flushes out some issues which trigger the initial discussions in the relationship. It also supports estimating the lifetime value of the customer and the appropriate levels of service. The data from this model combines with insight from product and transaction history as well as real time input from the abundance of interactive models to power rule-based coaching engines. This automated advice leverages the advisor's time so that a broad customer based can be profitably supported. Configured using sliders and other interactive controls, there is little typing to slow the process down. The controls build a linear graphic representation of a LifePath which models predictable life transitions over time more effectively then data-driven calculators. Sales opportunities, lifetime customer value and appropriate fee structure are now more accurately identified.

Risk analysis may be integrated into the LifePath model enabling clients to better understand their financial health and to improve trade-off decisions. Formulating a personal risk/reward strategy is difficult. The LifePath model supports a risk simulator, showing how the ideal model would be impacted by typical life crises. The model can be played repeatedly with varying outcomes to foster an intuitive understanding of exposure and to provide grounded input into trade-off decisions. Using the risk modeling tools, the advisor can add value, consolidate the relationship and rationalize a stream of product sales.

As shown in Figure **21**, LifePath model **164** captures the user's life intentions expressed as revenue intentions **628** and expense intentions **630**. As discussed above, revenue intentions **628** are a summary of the user's expense information **630**. The user is provided with an individual button for each of the income information categories **628**. For example, the user can input their income information such as salary, investment, pension, alimony, or disability, or other financial information as shown in Figure **21**. Similarly, the user can input their expense

intentions which are shown by the category of interactive buttons **630**. For example, the user can input expense information such as housing, transportation, education, health care, or other expense information as shown in Figure **21**.

Additionally, the user can control the level of risk that the model considers by selecting one or more of the graphical user interface ("GUI") elements from the list of risk events **632**. The risk events **632** include various life events that may affect the user's LifePath model. For example, the user can request that the model include job loss, disability, casualty, market downturn, or other personal risk factors into their LifePath model.

After providing the model with his or her life intentions expressed as revenue intentions **628** or expense intentions **630** in addition to any of the risk events, the user can select button **634** to run the LifePath model and initiate the advice generating subsystem. Accordingly, the user is provided with detailed advice in window **636** that is tailored to the user's life intentions and the risk events specified. As shown in window **636**, the user is provided with a clear automated coaching tailored to his or her life intentions gathered by the LifePath model. Furthermore, the coaching incorporates the risk events specified from the risk factors **632**. The graphical display **638** in figure **21** is a time series representation of the aggregated total of the user's cash flow over a selected period of time, based on the user provided revenue intentions **628** and expense intentions **630**.

Additionally, the system provides the user with interactive and context sensitive virtual coaching **616** and **636** that notes the actions of the user while he progresses through the LifePath model and provides the user with suggestions to ensure that he continues to comply with his or her life intentions.

The various embodiments described above are provided by way of illustration only and should not be constructed to limit the invention. Those skilled in the art will readily recognize the various modifications and changes which may be made to the present invention without strictly following the exemplary embodiments illustrated and described herein, and without departing from the true spirit and scope of the present invention, which is set forth in the following claims.